



October 10, 2003

Refer to: 930-03-021-AEA/ESB:lc

TO: Distribution

FROM: Eugene S. Burke

SUBJECT: Minutes for the Joint Users Resource Allocation Planning Committee Meeting held
September 18, 2003

**NEXT JURAP MEETING:
Thursday, October 16, 2003
JPL Bldg. 303, Room 411 1:00 p.m.**

Attendees:

Andujo, A.	Hearn, S.	Martinez, G.	Toyoshima, B.
Bartoo, R.	Holmes, D.	Martinez, K.	Velasco, J.
Brymer, B.	Kahr, J. R.	Odendahl, S.	Waldherr, S.
Burke, G.	Kehrbaum J.	Ross, J.	Yetter, B.
Doody, D.	Kim, K.	Ryan, R.	
Hampton, E.	Machado, M.	Thompson, T.	

The Joint Users Resource Allocation Planning Committee meets monthly to review the status of Flight Projects, the requirements of other resource users, and to identify future requirements and outstanding conflicts. The last regular meeting was held on September 18, 2003, at the Jet Propulsion Laboratory.

Introductory Remarks / Conflict Resolutions – N. Lacey

Mr. Burke welcomed the attendees and introduced Steve Odendahl from Goddard Space Flight Center, who will give a special report on the Wind and Polar missions. The Mid-range scheduling team completed negotiations up to week 11 of 2004, bringing the process to 21 weeks ahead of real-time. Although some conflicts still exist, they have been identified and are being negotiated at the appropriate levels. Specifically, in week one of 2004 there exists a conflict between MER1 EDL and Stardust

encounter support at DSS-14. Negotiations are being handled at the highest levels of the respective Projects.

Special Reports

Wind and Polar New Requirements – S. Odendahl

Changes in requirements for both the Wind and Polar missions were discussed. The presentation also included a detailed status of both spacecraft and their science objectives, explaining the changes in requirements.

RARB Action Items – N. Lacey

There is only one RARB Action Item that remains open. Multi-mission DSN Allocation and Planning (MDAP) has been providing a Mars Program coordinated input to Resource Allocation (Mid-Range) Planning Team (RAPT) at least 6 months prior to the schedule week.

Resource Analysis Team – K. Kim

Changes to the DSN Mission Planning Set include:

- The SIRTf launch has been changed to reflect the August 25, 2003 launch date.
- MESSENGER changed its launch date to May 11, 2004.

For a complete listing of Ongoing and Advanced Planning projects visit the following link for the RAPSO website: <http://rapweb.jpl.nasa.gov/tmodmiss.pdf>

DSS-25 and DSS -54 each now have a 20kW X-Band transmitter available.

For a complete listing of the DSN Resource Implementation visit the following link for the RAPSO website: <http://rapweb.jpl.nasa.gov/tmodplns.pdf>

A special study on Genesis has been completed.

The Mid-Range scheduling RAP Team has completed schedule negotiations for 22 weeks ahead of real-time.

DSN Downtime Forecast – A. Andujo

The Antenna Balancing task at DSS-43, proposed and approved at the August 2003 RARB, will be proposed to move to an earlier date due to concerns over its close proximity to the Cassini Saturn Orbit Insertion, which will require DSS-43 for its success. At this time the task is being re-planned. A request to affected users will be sent out prior to the next JURAP meeting, where it will be asked to be ratified.

Please see the attached downtime report for complete listing of downtime or visit the following link on the RAPSO website: <http://rapweb.jpl.nasa.gov/planning.htm>

DSN Operations – J. Buckley

There was no presentation given at this month's JURAP, though presentation material is included with the Minutes.

Goldstone Solar System Radar – M. Slade

There was no presentation given at this month's JURAP, though presentation material is included with the Minutes.

Radio Astronomy / Special Activities – G. Martinez

In July and August, the DSN performed three Clock Sync's; two went perfectly, while one experienced an error at one antenna. 90% data capture was reported. Three of four Cat M & E's experienced hardware problems at one of the two antennas; the fourth had no problems. In total, 87% of the data time was utilized.

Two simultaneous Guest Observing tracks with the Integral spacecraft reported no problems. Radio sources BF073A and BF073B of Scorpius X1 were observed. The Space Geodesy Program performed a Celestial Reference Frame experiment, CRF-21. No issues were reported during the 24-hour support.

JURAP Science Advisor – E. Smith

There was no presentation given at this month's JURAP.

FLIGHT PROJECTS REPORTS***Mars Express – J. Velasco for D. Holmes***

Mr. Velasco stated that at the MEX spacecraft continues in its cruise phase. Operations continue smoothly although the spacecraft went into safe mode recently. The last three safing incidents suffered by the spacecraft have been attributed to a data-handling overload in the start tracker. The project continues to investigate the issue. Although the link margin at DSS-16 was too low to lock up to the spacecraft the station was able to assist during the incident and detect the S-band carrier signal, later DSS-66 was able to lock up allowing the project to command the spacecraft back to normal operations.

INTEGRAL – J. Velasco for D. Holmes

Integral operations have been nominal with no outstanding problems and the spacecraft has been operating near flawlessly. All operations with the 26-meter automation system have been minimized to a manageable level.

Space Infrared Telescope Facility – J. Kahr

Mr. Carr presented the very first status report of the SIRTf mission. The spacecraft is doing well and they are proceeding with the 90-day checkout period as planned, with instrument calibrations and calibrating the position of the array. During this 90-day period the project is waiting for the cool down

of the optics to about 5.5 Kelvin, when observations can begin. The spacecraft continues to perform as expected, with the exception of the solar cells, which are maintaining a temperature of about 40 degrees warmer than expected. There appears to be no adverse effects from this condition. The project is off to a successful mission of at least two and a half, but more likely five years duration. The spacecraft team at Lockheed Martin Astronautics Denver reports

that all of the in-orbit checkout (IOC) activities are on track, and the data return rate achieved its maximum 2.2mbits.

Mars Exploration Rover – B. Toyoshima

Both MER spacecraft are in good health and operations, are proceeding normally, and are in a "Cruise 3" configuration where the spacecraft operate at an overall reduced capacity during its long trip to Mars. Currently the mission is performing Post Launch Operations Readiness Test #5 of 6. Although all operations are proceeding well, there was an incident resulting in data being lost after being received by JPL, due to the DSN. The project will be performing array testing at the 34-meter stations, in the event that a 70-meter antenna is down for an extended period.

Ulysses – B. Brymer

The spacecraft is nominal and spacecraft operations continue as usual. Although NSP is providing excellent support, the project has lost the ability to perform HUS Datation calibrations. A replacement procedure has been developed and will be tested at DTF21.

Cassini – D. Doody

The Cassini spacecraft is doing well. The project performed the Huygens Probe Checkout #12 successfully. The Cassini GWE #3 is upcoming. The experiment will be conducted for 20 days of continuous support. The mission is preparing for the Approach Science mission phase, which begins in January '04.

Daily operations are going well. TCM 19 was completed successfully. The project is very pleased with the availability of the Tracking Support Specialist now in the Darkroom. The project had been having a problem commanding, until it was discovered that the DSN was occasionally not using the correct data rate due to an incorrect value in an out-of-date table in the commanding system.

MAP, ACE, IMAGE, Genesis, WIND, POLAR, SOHO, GEOTAIL and Cluster – S. Waldherr

The WMAP spacecraft scheduled an L2 station-keeping maneuver, but discovered that it was not necessary and cancelled it. ACE, SOHO, Geotail, POLAR and Cluster operations are nominal and the spacecraft is healthy. The PROSEDS mission has been funded, but there is no known launch date and they have not acquired a launch vehicle.

Stardust - R. Ryan

There was no presentation given at this month's JURAP, though presentation material is included with the Minutes.

Chandra – K. Gage

There was no presentation given at this month's JURAP.

Voyager – J. Hall

It was reported that both Voyager spacecraft are healthy and all operations are nominal. Overall DSN support was reported as good.

NOZOMI – M. Ryne

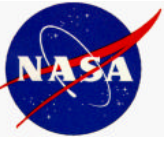
There was no presentation given at this month's JURAP.

Hayabusa – M. Ryne

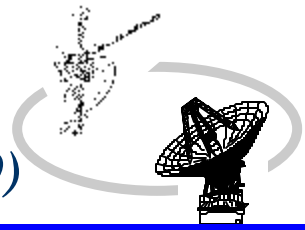
There was no presentation given at this month's JURAP.

Mars Odyssey – P. Poon

There was no presentation given at this month's JURAP.



Interplanetary Network Directorate
DEEP SPACE MISSION SYSTEMS (DSMS)



JPL

Resource Allocation Planning & Scheduling Office (RAPSO)

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE



Resource Analysis Team

September 18, 2003

Kevin Kim

– Ongoing / Approved Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
DSN Antenna Calibration	DSN	--	--	--
DSS Maintenance	DSS	--	--	--
European VLBI Network	EVN	--	--	--
Ground Based Radio Astronomy	GBRA	--	--	--
Reference Frame Calibration	DSN	--	--	--
Space Geodesy	SGP	--	--	--
Voyager 2	VGR2	08/20/77	10/15/89	09/30/07
Voyager 1	VGR1	09/05/77	12/31/80	09/30/07
Goldstone Solar System Radar	GSSR	04/01/85	--	--
Galileo	GLLO	10/18/89	12/07/97	09/21/03
Ulysses	ULYS	10/06/90	09/11/95	09/30/04
ISTP - Geotail	GTL	07/24/92	07/24/95	09/30/07
ISTP - Wind	WIND	11/01/94	11/01/97	09/30/07
ISTP - SOHO	SOHO	12/02/95	05/02/98	09/30/07
ISTP - Polar	POLR	02/22/96	08/23/97	09/30/07
Gravity Probe B	GPB	06/01/96	05/30/05	TBD
Mars Global Surveyor	MGS	11/07/96	02/01/01	01/03/08

– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Advance Composition Explorer	ACE	08/25/97	02/01/01	09/30/07
Cassini	CAS	10/15/97	06/30/08	06/30/10
Nozomi (Planet-B)	NOZO	07/03/98	12/31/05	TBD
Stardust	SDU	02/07/99	01/14/06	- - -
Chandra X-ray Observatory	CHDR	07/23/99	07/24/09	07/24/14
Imager for Magnetopause-to-Aurora Global Exploration	IMAG	03/25/00	05/30/02	09/30/07
Cluster 2 - S/C #2 (Samba)	CLU2	07/16/00	02/15/03	09/30/07
Cluster 2 - S/C #3 (Rumba)	CLU3	07/16/00	02/15/03	09/30/07
Cluster 2 - S/C #1 (Salsa)	CLU1	08/09/00	02/15/03	09/30/07
Cluster 2 - S/C #4 (Tango)	CLU4	08/09/00	02/15/03	09/30/07
2001 Mars Odyssey	M01O	04/07/01	08/24/04	05/29/08
Wilkinson Microwave Anisotropy Probe	WMAP	06/30/01	10/01/03	10/01/06
Genesis	GNS	08/08/01	09/08/04	- - -
Mission Enhancement by Ground-based Astronomy	MEGA	02/01/02	12/31/08	- - -
International Gamma Ray Astrophysics Lab	INTG	10/17/02	12/18/04	12/18/07
Hayabusa (MUSES - C)	MUSC	05/09/03	06/05/07	- - -
Mars Express Orbiter	MEX	06/02/03	02/11/06	08/03/08

– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Spirit (Mars Exploration Rover - A)	MER2	06/10/03	04/06/04	05/11/04
Opportunity (Mars Exploration Rover - B)	MER1	07/08/03	04/27/04	06/15/04
Space Infrared Telescope Facility	STF	08/25/03	10/12/08	---
Rosetta	ROSE	02/26/04	12/31/15	---
Messenger	MSGR	05/11/04	04/06/10	---
Lunar - A	LUNA	08/14/04	04/11/05	---
Space Technology 5	ST5	11/19/04	02/27/05	TBD
Deep Impact Flyby	DIF	12/30/04	08/05/05	---
RadioAstron	RADA	03/15/05	06/15/10	TBD
Mars Reconnaissance Orbiter	MRO	08/10/05	12/31/10	12/31/15
Stereo Ahead	STA	11/15/05	02/15/08	---
Stereo Behind	STB	11/15/05	02/15/08	---

– Advanced / Planning Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
New Horizons	NHPC	01/10/06	03/18/17	TBD
Dawn	DAWN	05/27/06	07/26/15	TBD
Mars Competed Scout 2007	M07S	08/19/07	08/23/08	08/22/10
Kepler	KPLR	10/01/07	09/26/11	TBD
Mars Telecommunications Orbiter 2009	M09T	09/07/09	09/07/16	09/07/20
Mars Science Laboratory 2009	M09L	10/25/09	03/04/12	TBD
James Webb Space Telescope	JWST	08/01/11	07/31/16	TBD
Advanced Radio Interferometry between Space and Earth (ARISE)	ARSE	06/15/10	06/15/15	- - -
VLBI Space Observatory Programme (VSOP-2)	VSP2	06/15/10	06/15/15	- - -
Space Interferometry Mission	SIM	12/31/09	06/30/20	TBD
Mars Competed Scout 2011	M11S	10/30/11	09/10/14	TBD
Mars MSR Lander/Orbiter 2013	M13O	11/28/13	08/21/16	TBD

Station	Subnet	Delivery Date	S-Band Down	S-Band Up	X-Band Down	X-Band Up	20 kW X-Band	Ka-Band Down	Ka-Band Up	NSP
DSS-14	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-15	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-16	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-24	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	10/01/05	N/A	XXXX
DSS-25	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
DSS-26	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	XXXX	XXXX	N/A	XXXX
DSS-27	34HSB	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	01/31/05
DSS-34	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	06/27/05	N/A	XXXX
DSS-43	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-45	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-46	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-54	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	08/01/06	N/A	XXXX
DSS-55	34BWG2	11/01/03	N/A	N/A	11/01/03	11/01/03	11/01/03	11/01/03	N/A	11/01/03
DSS-63	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-65	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-66	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A

XXXX = Capability Currently Exists
N/A = Capability Not Planned

◆ RESOURCE NEGOTIATION STATUS

- 2003 WEEKS 45 – 48 (THRU 11/30/2003) RELEASED TO DSN ON 09/12/2003.
- 2003 WEEKS 49 – 52 (THRU 12/28/2003) DUE TO BE RELEASED ON 10/10/2003.
- 2004 WEEKS 09 – 11 (THRU 03/14/2003) WILL GO INTO NEGOTIATIONS STARTING 09/19/2003.

Note: At this time the mid-range scheduling process has completed negotiations of 25 weeks of conflict-free schedules.

◆ SPECIAL STUDIES/ACTIVITIES

- GENESIS SPECIAL STUDY

◆ ON-GOING ACTIVITIES

- MADB/TIGRAS TESTING AND TRAINING
- DOWNTIME PLANNING
- LUNAR-A LOAD STUDY – MISSION REPLAN
- MESSENGER SPECIAL STUDY – LAUNCH CHANGE
- ROSETTA LOAD STUDY – MISSION REPLAN
- ULYSSES EXTENDED MISSION STUDY

◆ **RARB - AUGUST 12, 2003**

– MINUTES POSTED ON 09/17/2003

[HTTP://RAPWEB.JPL.NASA.GOV](http://rapweb.jpl.nasa.gov)

DSN Antenna Downtime Status and Forecast



<http://rapweb.jpl.nasa.gov/planning>

Antenna Downtime Status and Forecast

Changes to 2003 Downtime Schedule

- ❑ The DSS-43 XHMT Replacement task has been scheduled to occur October 13 – 15, 2003 (DOY 286/1700 – 288/0750). This request was processed and resolved during the DSN negotiation process.
- ❑ There are no outstanding downtime requests for 2003. All previous requests have been negotiated and approved, either through the RARB, JURAP or Mid-Range Scheduling processes. No requests will be processed during the Antenna Contention period (ACP) of November 2003 – March 2004, without approval from JPL/DSN Management.

Antenna Downtime Status and Forecast

Changes to 2004 Downtime Schedule

- ❑ The DSS-14 Antenna Controller Replacement/Hydrostatic Bearing task scheduled from weeks 28-47 has been extended as requested by two weeks, to weeks 28-49 (22 week duration). This downtime has been approved during the August 2003 RARB.
- ❑ The DSS-45 Antenna Controller Replacement task scheduled from weeks 43-49 has been moved to another year, and in its place parts 1 and 2 of the DSS-45 Life Extension Task has been approved from week 33-49 (17 week duration) leaving the USC task previously scheduled in weeks 48-49 NIB. This downtime has been approved during the August 2003 RARB.
- ❑ The DSS-43 Antenna Rebalancing task was approved to occur in weeks 25-26 of 2004. This proposal was presented at the August 2003 RARB for approval by all board members but was contested by the Cassini project representatives. The task times have been reanalyzed and will be proposed to occur in weeks 22-23 of 2004 (May 29 –June 06, 2004)

The changes to the DSS-14 and DSS-45 tasks will be presented at the August 2003 RARB and approved by all board members and were uncontested by any project representatives.

Antenna Downtime Status and Forecast

Changes to 2005 Downtime Schedule

- ❑ NSP Implementation task at DSS-27 has been approved to occur in weeks 01 – 04 of 2005.
- ❑ The addition of the DSS-65 Relocation and DSS-65 Life Extension tasks to the previously approved DSS-65 Antenna Controller Replacement task scheduled from weeks 08 – 14 has been approved as well as the additional three weeks to the front and 7 weeks to the end. The tasks are now scheduled to occur in weeks 05 – 21 of 2005 (17 week duration).
- ❑ The addition of the DSS-43 Hydrostatic Bearing task to the DSS-43 Antenna Controller Replacement task scheduled from weeks 30 – 36 has been approved, as well as the additional one week to the front and 16 weeks to the end. The tasks are now scheduled to occur in weeks 29 – 52 of 2005 (24 week duration).
- ❑ The previously approved DSS-63 Antenna Controller Replacement task scheduled from weeks 38 – 44 has been moved to 2006 due to changes to the DSS-43 time in 2005. All supports moved or modified by the task have been restored to their original request.

Antenna Downtime Status and Forecast

Changes to 2005 Downtime Schedule (Continued)

- ❑ The previously approved DSS-63 USC (Microwave Switch Controller) task scheduled in weeks 38 – 39 of 2005, has been approved to move to weeks 03 – 04 of 2005. This change was made due to the DSS-63 ACR change.

The addition of the DSS-27 NSP and changes to the DSS-65, DSS-43 and DSS-63 tasks were presented at the August 2003 RARB and approved by all board members and were uncontested by any project representatives.

Antenna Downtime Status and Forecast

Changes to 2006 Downtime Schedule

- ❑ The previously approved DSS-45 Antenna Controller Replacement task scheduled in weeks 43 - 49 of 2004 has been approved to move to weeks 44 - 52 of 2006 (9 week duration)
- ❑ The previously approved DSS-63 Antenna Controller Replacement task scheduled in weeks 38 – 44 of 2005 has been approved to occur in weeks 21 - 35 of 2006 (15 week duration)

The addition of the DSS-45 and DSS-63 tasks were presented at the August 2003 RARB and approved by all board members and were uncontested by any project representatives.

Antenna Downtime Status And Forecast Schedule

DSN Antenna Downtime Report

As of: September 29, 2003

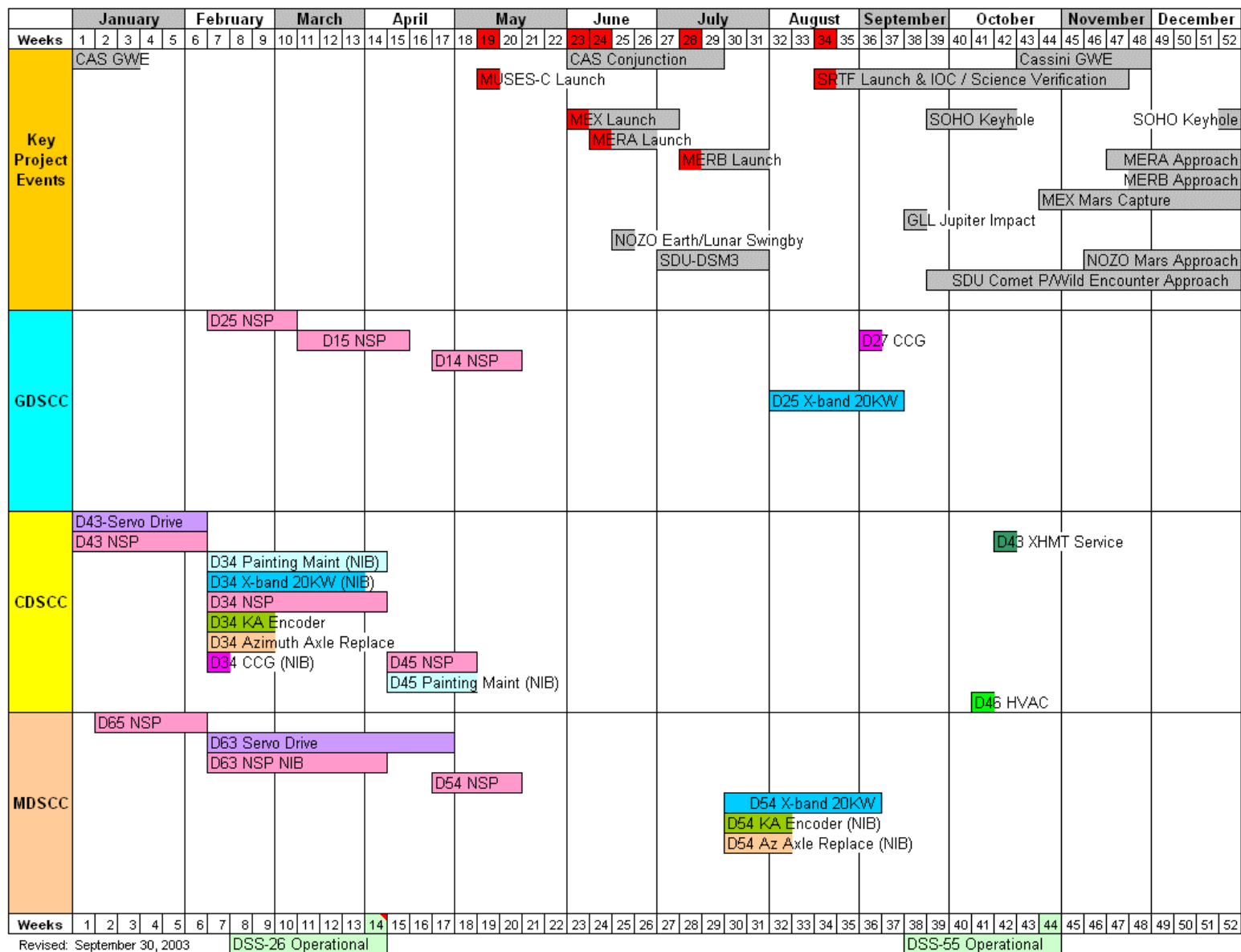
2003							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 46	HVAC Maintenance	10/06/2003 22:00	10/11/2003 06:00	5	41 - 41	279	283
DSS 43	XHMT Service	10/13/2003 17:00	10/15/2003 07:50	2	42 - 42	286	287

2004							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 15	Antenna Controller Replacement	04/12/2004 00:00	06/13/2004 23:59	63	16 - 24	103	165
DSS 43	Antenna Rebalance	06/21/2004 00:00	06/27/2004 23:59	7	26 - 26	173	179
DSS 14	Antenna Controller Replacement	07/07/2004 00:00	12/07/2004 23:59	154	28 - 50	189	342
DSS 14	Hydrostatic Bearing	07/07/2004 00:00	12/07/2004 23:59	154	28 - 50	189	342
DSS 45	Life Extension	08/09/2004 00:00	12/05/2004 23:59	119	33 - 49	222	340
DSS 14	NIB - USC Installation	09/20/2004 00:00	10/03/2004 23:59	14	39 - 40	264	277
DSS 45	NIB - USC Installation	11/22/2004 00:00	12/05/2004 23:59	14	48 - 49	327	340

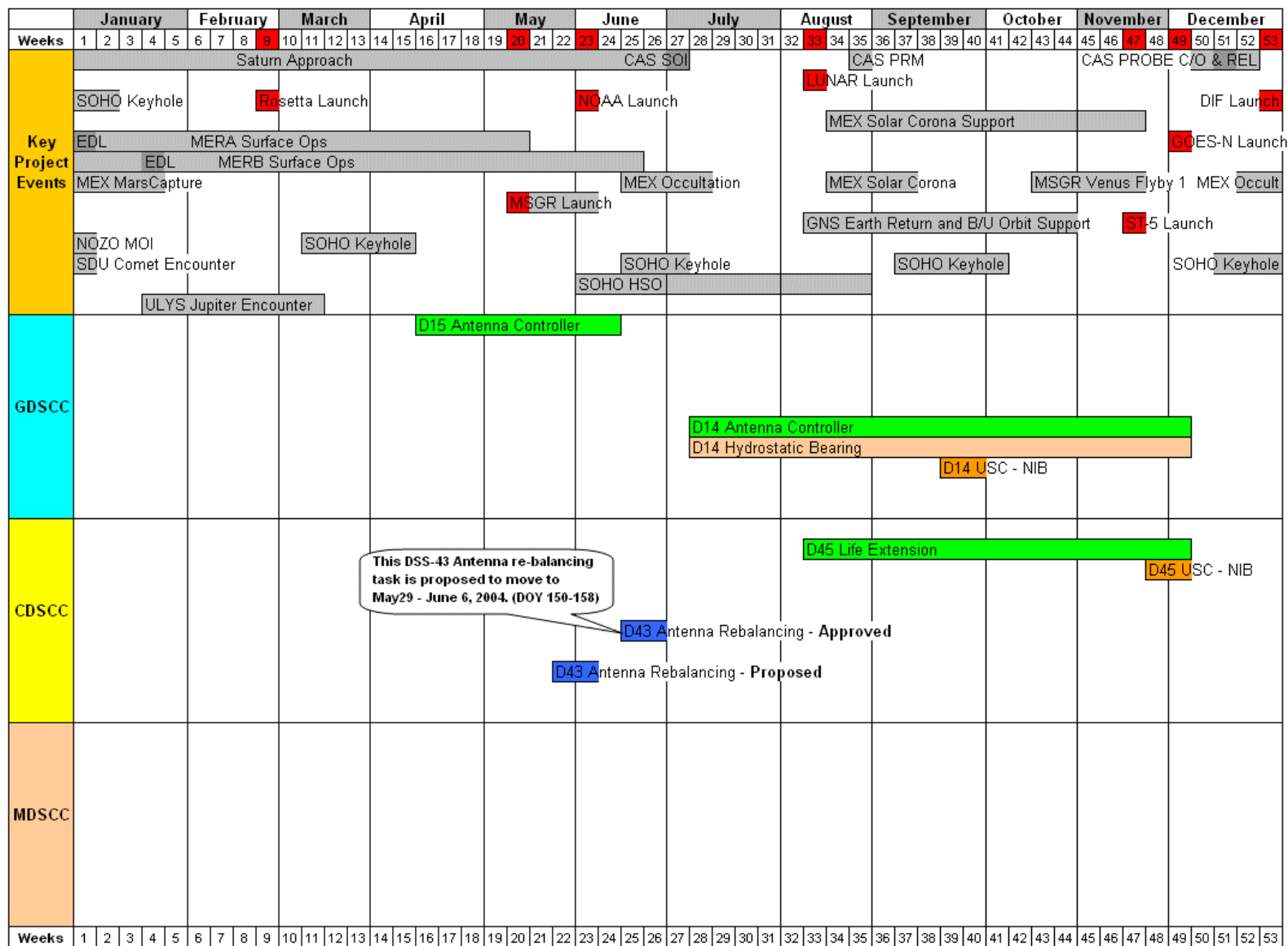
2005							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 27	NSP Implementation	01/03/2005 00:00	01/30/2005 23:59	28	01 - 04	003	030
DSS 27	NIB - USC Installation	01/10/2005 00:00	01/23/2005 23:59	14	02 - 03	010	023
DSS 63	USC Installation	01/17/2005 00:00	01/30/2005 23:59	14	03 - 04	017	030
DSS 26	USC Installation	01/24/2005 00:00	02/06/2005 23:59	14	04 - 05	024	037
DSS 65	Antenna Controller Replacement	01/31/2005 00:00	05/29/2005 23:59	119	05 - 21	031	149
DSS 65	Relocation	01/31/2005 00:00	05/29/2005 23:59	119	05 - 21	031	149
DSS 65	Life Extension	01/31/2005 00:00	05/29/2005 23:59	119	05 - 21	031	149
DSS 65	NIB - USC Installation	02/21/2005 00:00	02/27/2005 23:59	7	08 - 08	052	058
DSS 25	USC Installation	02/21/2005 00:00	03/06/2005 23:59	14	08 - 09	052	065
DSS 15	USC Installation	04/11/2005 00:00	04/24/2005 23:59	14	15 - 16	101	114
DSS 54	USC Installation	04/11/2005 00:00	04/17/2005 23:59	7	15 - 15	101	107
DSS 55	USC Installation	04/25/2005 00:00	05/01/2005 23:59	7	17 - 17	115	121
DSS 34	X/X-Ka Band	05/02/2005 00:00	06/26/2005 23:59	56	18 - 25	122	177
DSS 34	NIB - USC Installation	05/02/2005 00:00	05/15/2005 23:59	14	18 - 19	122	135
DSS 24	USC Installation	06/27/2005 00:00	07/03/2005 23:59	7	26 - 26	178	184
DSS 43	Antenna Controller Replacement	07/18/2005 00:00	01/01/2006 23:59	168	29 - 52	199	001
DSS 43	Hydrostatic Bearing	07/18/2005 00:00	01/01/2006 23:59	168	29 - 52	199	001
DSS 43	NIB - USC Installation	07/25/2005 00:00	08/07/2005 23:59	14	30 - 31	206	219

2006							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	Antenna Controller Replacement	05/22/2006 00:00	09/03/2006 23:59	105	21 - 35	142	246
DSS 24	X/X-Ka Band	09/04/2006 00:00	10/22/2006 23:59	49	36 - 42	247	295
DSS 45	Antenna Controller Replacement	10/30/2006 00:00	12/31/2006 23:59	63	44 - 52	303	365

Antenna Downtime Status And Forecast 2003

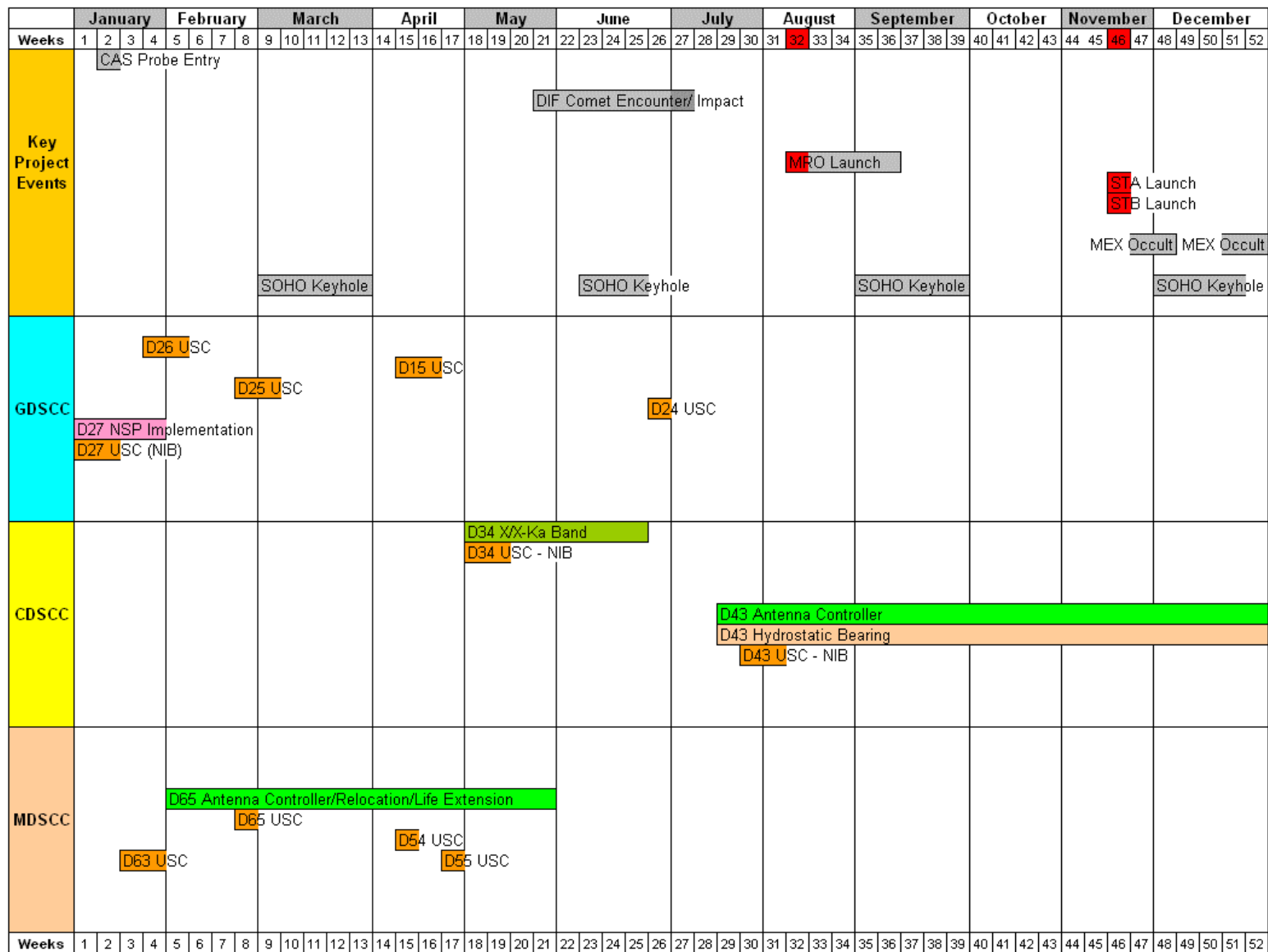


Antenna Downtime Status And Forecast 2004



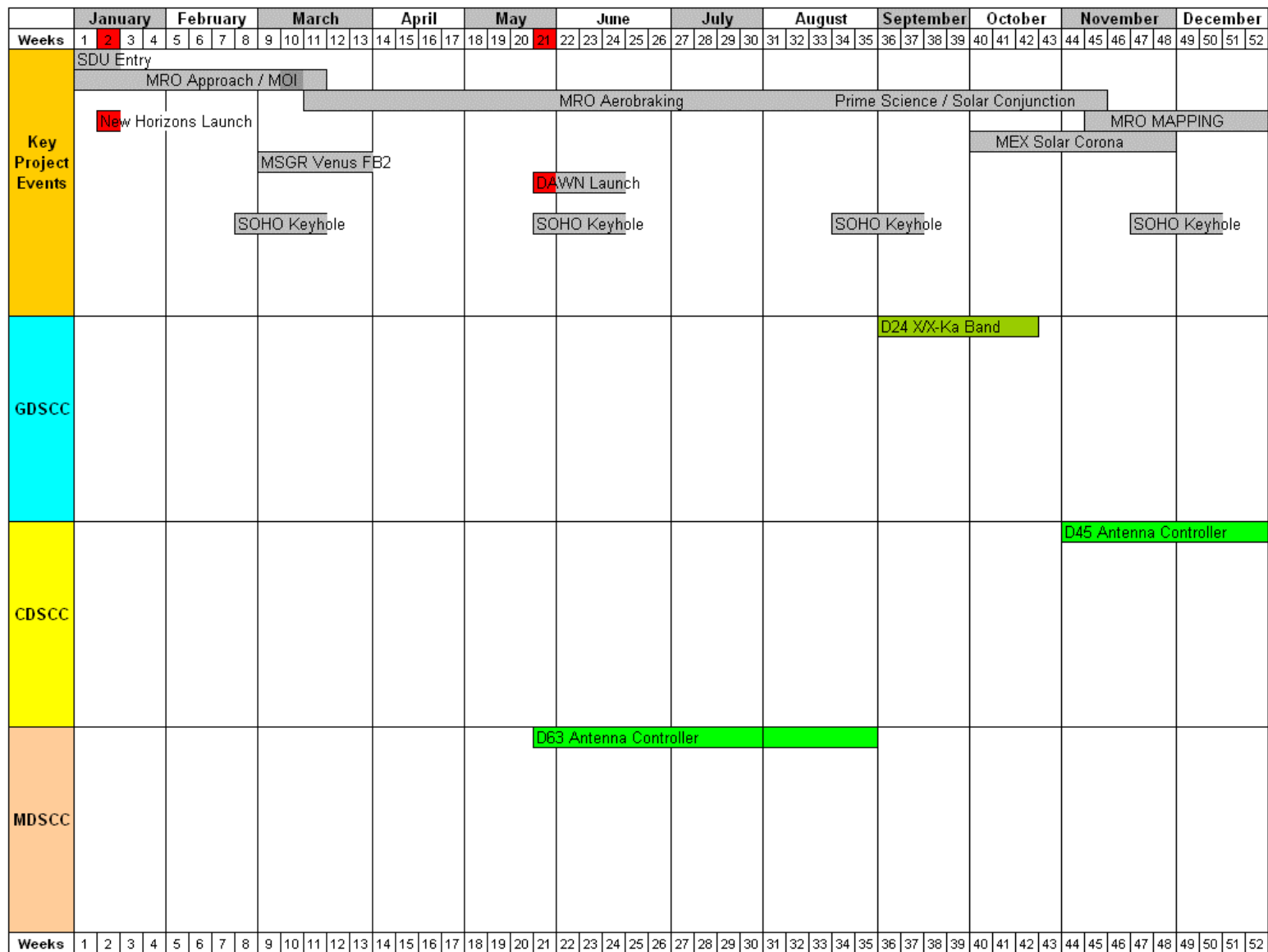
Revised: September 30, 2003

Antenna Downtime Status And Forecast 2005

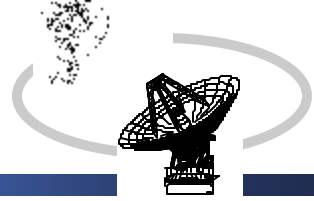


Revised: September 30, 2003

Antenna Downtime Status And Forecast 2006



Revised: September 30, 2003



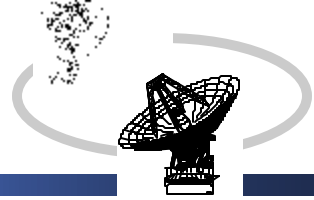
Radio Astronomy & Special Activities

**September 18, 2003
George Martinez**



TEMPO

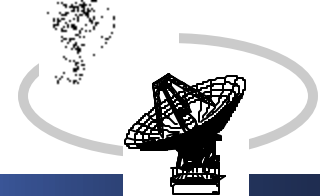
(Time and Earth Motion Precision Observations)



- **July**
 - **Clock Sync DOY 192**
 - No problems were reported by DSS-15.
 - DSS-65 reported a problem with the Digital Tone Extractor (DTE).
 - Data tapes sent to the JPL correlator for processing.
 - **Clock Sync DOY 203**
 - No problems were reported by by either DSS-15 or DSS-65.
 - Data tapes sent to the JPL correlator for processing.
- **August**
 - **Clock Sync DOY 230**
 - No problems were reported by either DSS-15 or DSS-65.
 - Data tapes were sent to the JPL correlator for processing
 - **Project requirements not met.**
 - First Clock Sync in 27 days (~4 weeks)
 - Requirement is 1 Clock Sync every 14 days.
- **Metrics**
 - 90% of data time utilized



Catalog Maintenance & Enhancement (Cat M&E)



- **DOY 194**
 - No problems were reported by DSS-15.
 - DSS-65 reported a problem with the tape recorder and the antenna hitting elevation prelimits.
 - Data tapes were sent to the JPL correlator for processing
- **DOY 199**
 - No problems were reported by DSS-15 or DSS-65.
 - Data tapes were sent to the JPL correlator for processing.
- **DOY 207**
 - No data loss was reported by DSS-45.
 - DSS-15 reported a complex power failure.
 - Data tapes were sent to the JPL correlator for processing.



Catalog Maintenance & Enhancement (Cat M&E) - continued

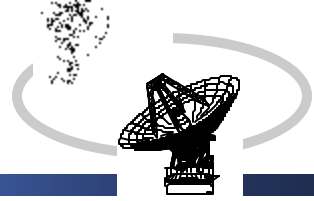


- **DOY 228**
 - DSS-15 reported a problem with the ACS.
 - No problems were reported by DSS-45.
 - Data tapes shipped to the JPL correlator.
- **Metrics**
 - 87% of data time utilized.





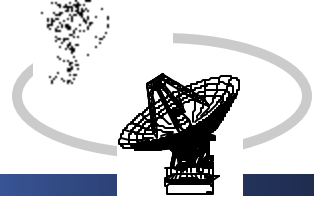
Guest Observing



- **BF073A and BF073B**
 - A K-band dual polarization experiment to observe Sco X-1 simultaneous to Integral observations.
 - These VLBI observations are expected to produce correlation of the radio source with high energy emission and will be crucial in understanding the processes and evolution of the core.
 - No problems were reported by DSS-43 for either experiment.
 - Data tapes were sent to the Socorro Correlator for processing.



Space Geodesy Program (SGP)



- **Celestial Reference Frame (CRF)-21**
 - The purpose of the CRF experiments is to improve the determination of the celestial reference frame in the Southern Hemisphere and to form a better link between the southern and northern hemisphere.
 - No problems were reported by DSS-45.
 - Data tapes sent to the Washington correlator for processing.
 - Correlator reports fringes on all sources.





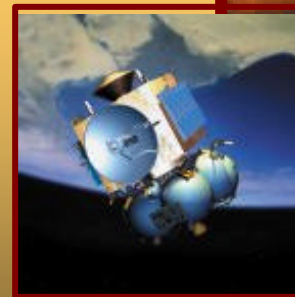
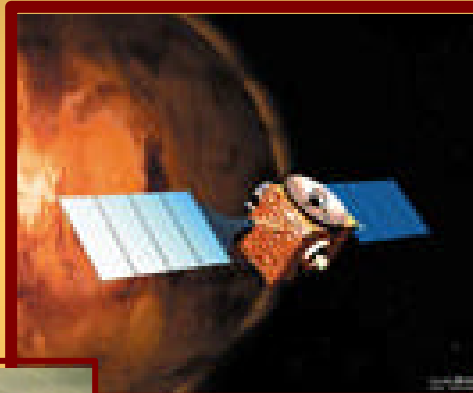
U.S. Participation in Europe's *Mars Express*

Jet Propulsion Laboratory
California Institute of Technology

Presentation to the Joint Users Resource Allocation Planning (JURAP) Meeting

Jesse Velasco
for Dwight P. Holmes

Sept 18, 2003



<http://www.sci.esa.int/marsexpress/>



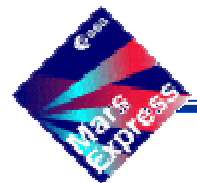
U.S. Participation in Europe's *Mars Express*

Jet Propulsion Laboratory
California Institute of Technology



Operations

- **Spacecraft entered safe mode on 3 September**
 - DSS-16 was brought up in real-time to confirm the S-band carrier.
 - Project configured the spacecraft back to normal operations within 24 hours.
- **Trajectory Course Maneuver (TCM)**
 - TCM was successfully performed 10 September.



MEX

September 18, 2003 JV- 2



U.S. Participation in Europe's *Mars Express*

Jet Propulsion Laboratory
California Institute of Technology

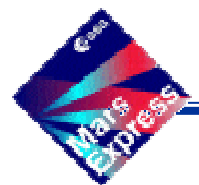


Operations

- **DSN Supports**

WK 35 - 38

- **DSN supported six DDOR activities**
- **TWO 20kW transmitter demos supported (DSS-25 & 54).**



MEX

September 18, 2003 JV- 3



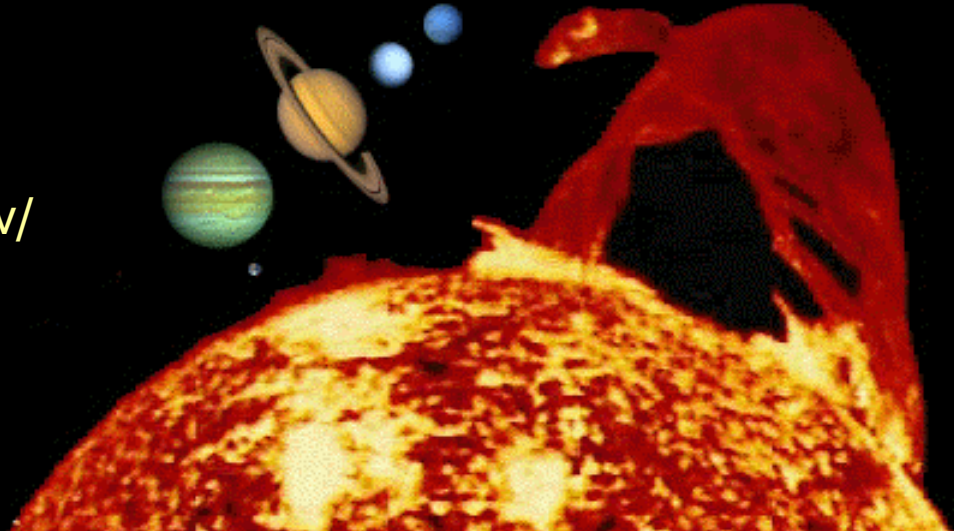
ulysses

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

B. Brymer

September 18, 2003

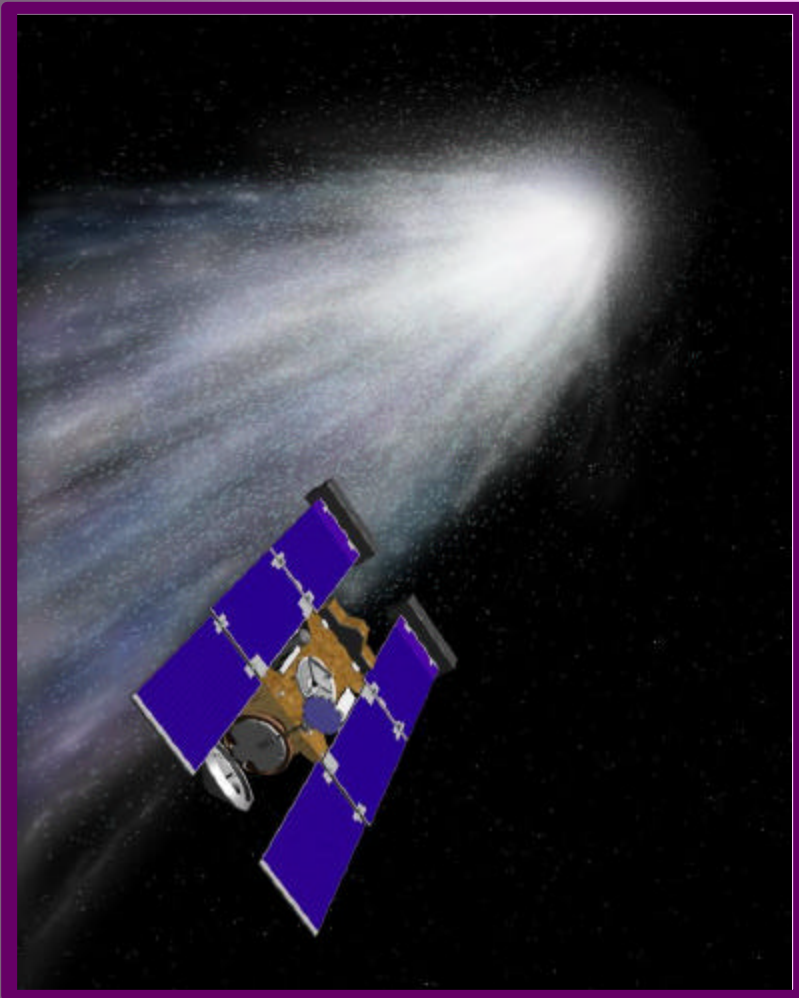
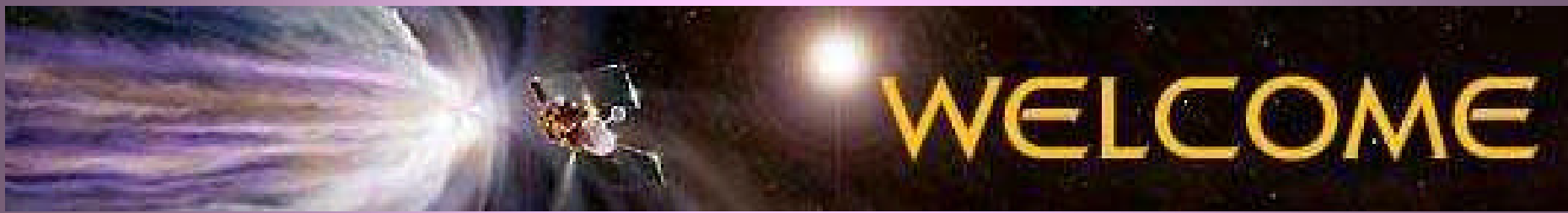
NASA Jet Propulsion Laboratory



ULYSSES

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

- NOMINAL SPACECRAFT OPERATIONS CONTINUE
- SPACECRAFT POWER AND THERMAL RECONFIGURATIONS AND INSTRUMENT CALIBRATIONS ARE PERFORMED AS REQUIRED
- SPACECRAFT EARTH POINTING MANEUVERS ARE BEING PERFORMED EVERY 4 DAYS
- DSN PROVIDING GOOD SUPPORT
- LOST HUS DATATION CALIBRATION CAPABILITY WITH NSP
 - The NSP Team is researching a make-good for this lost capability



STARDUST

JOINT USERS

RESOURCE ALLOCATION

PLANNING COMMITTEE

R. E. Ryan

SEPTEMBER 18, 2003

NASA Jet Propulsion Laboratory

<http://stardust.jpl.nasa.gov>

STATUS

SPACECRAFT IS HEALTHY (9/18/03)

PRESENTLY 2.2 AU from EARTH

00:36:22 RTLT

1.2 AU from SUN

SUPERIOR CONJUNCTION

SEP (approx) 1.7 degrees

TELEMETRY BIT RATE IS 504 bps (on HGA/34 HEF)

COMMAND MORATORIUM

UNTIL 2 degrees SEP (9/28)

CURRENT ACTIVITIES

- **SUPERIOR CONJUNCTION**

AUGUST 17 WAS MINIMUM SEP OF 0.9 DEGREES

SOLAR RANGE MINIMUM WAS 0.98 AU ON JULY 22

EARTH RANGE WAS 2.0 AU

**BELOW 2 DEGREES SEP FROM AUGUST 2 THROUGH OCTOBER 2
(COMMAND UPLINK MORATORIUM)**

- **DSMS SUPPORT SATISFACTORY THIS PAST PERIOD**

- **GOOD SUPPORT FOR CONJUNCTION**

- **REASONABLE TELEMETRY RETURN**

<http://stardust.jpl.nasa.gov>

UPCOMING EVENTS

EXIT FROM SUPERIOR CONJUNCTION ON OCTOBER 3

WILD-2 ENCOUNTER STARTS AT -100 DAYS, SEPTEMBER 24

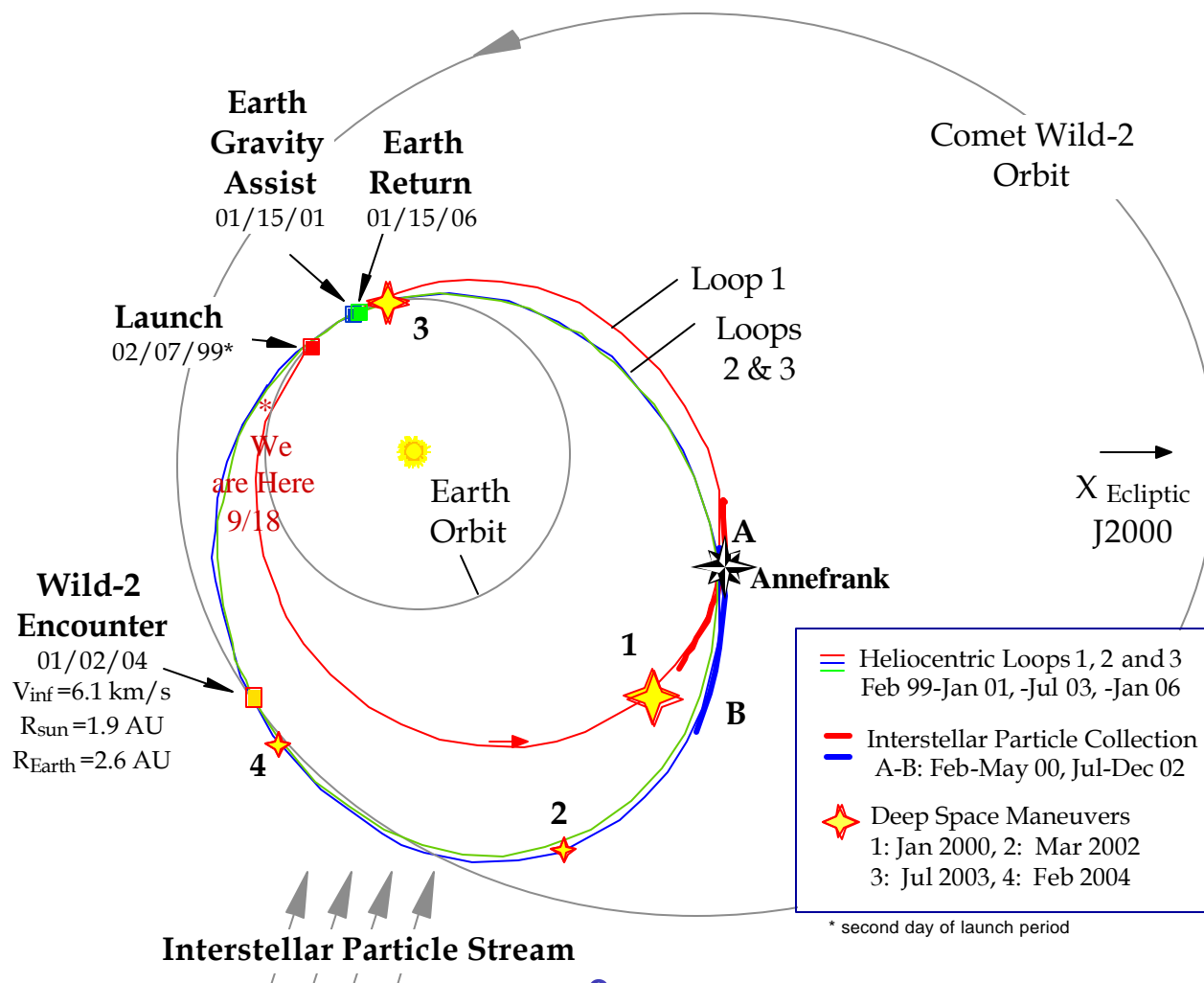
ONCE PER WEEK NAV CAMERA OBSERVATIONS

CONTAMINATION CALIBRATION ON 10/8

GEOMETRIC AND PHOTOMETRIC CALIBRATION

STARDUST

Report to JURAP



* second day of launch period



VOYAGER

FLIGHT OPERATIONS

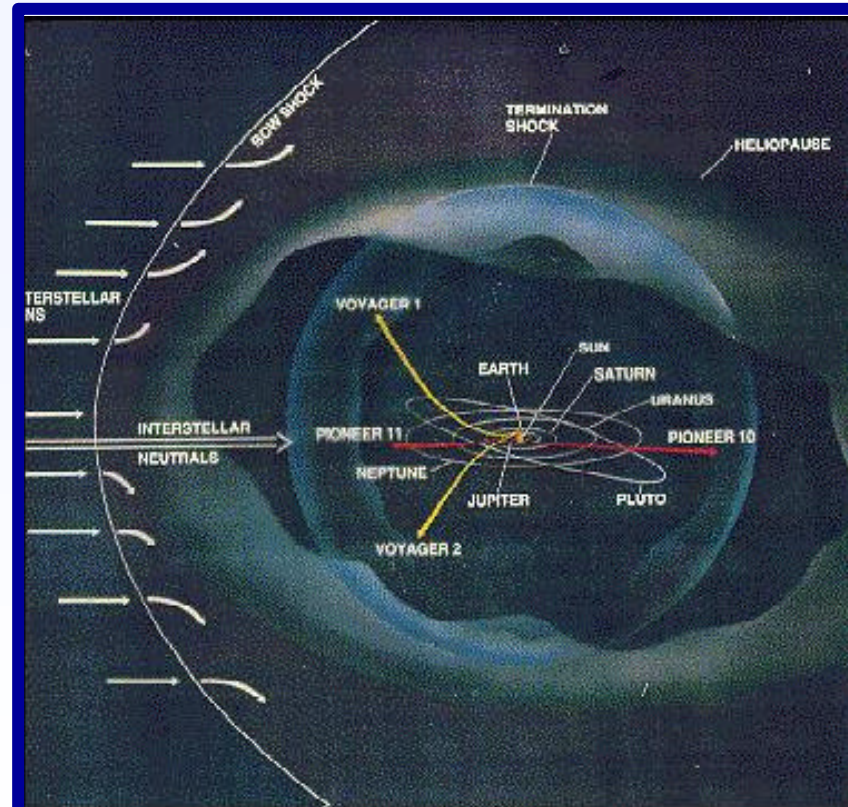
JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

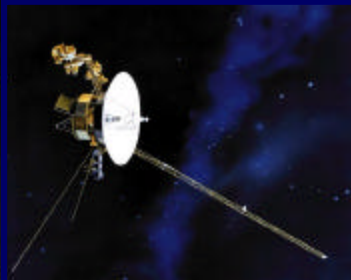
**Jefferson Hall
September 18, 2003**

NASA Jet Propulsion Laboratory



<http://voyager.jpl.nasa.gov>





VOYAGER

FLIGHT OPERATIONS



FLIGHT SYSTEM STATUS

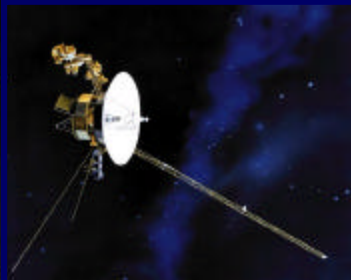
MISSION STATUS

VOYAGER 1

- * HELIOCENTRIC DISTANCE – 89.5 AU, RTLT – 24h52m38s
- * SPACECRAFT REMAINS HEALTHY
- * MAJOR ACTIVITY: DTR PLAYBACK, PMPCAL, MAGROL, & ASCAL

VOYAGER 2

- * HELIOCENTRIC DISTANCE – 71.0 AU, RTLT – 19h40m20s
- * SPACECRAFT REMAINS HEALTHY
- * MAJOR ACTIVIT: DTR PLAYBACK, PMPCAL, MAGROL, PMPCAL



VOYAGER

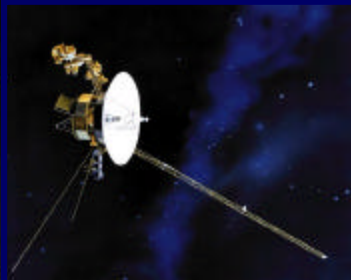
FLIGHT OPERATIONS



GROUND SYSTEM STATUS

(JULY 12, 2003 - SEPTEMBER 12, 2003)

- DSN - OVERALL SUPPORT – GOOD
- NUMEROUS OUTAGES ON BOTH SPACECRAFT DUE TO WEATHER AND HARDWARE PROBLEMS ACROSS THE NETWORK [all documented on DRs]
- ON 8/15, RELEASED 3.8 HOURS OF DSS-34 SUPPORT FOR A SIRTf RNS TEST. RELEASED 8.2 HOURS OF DSS-34 SUPPORT FOR SIRTf LAUNCH.



VOYAGER

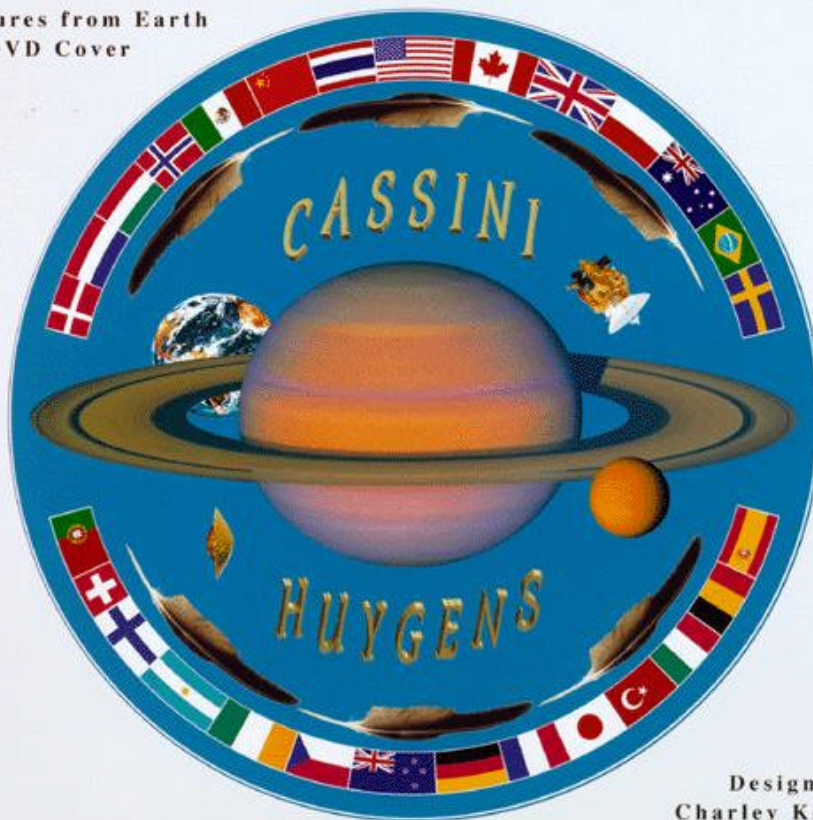
FLIGHT OPERATIONS



TOTAL SUPPORT TIME, OUTAGE TIME, % OF OUTAGE TIME

S/C	SCHED. SUPPORT	ACTUAL SUPPORT	70M TIME	SIGNIFICANT OUTAGE TIME	% OF OUTAGE TIME
31	800.4	798.3	352.5	28.1(3.5)	3.96
32	608.2	592.9	222.8	13.2(3.0)	2.73

VOYAGER HOMEPAGE - <http://voyager.jpl.nasa.gov>



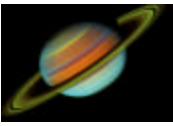
<http://saturn.jpl.nasa.gov/cassini/index.shtml>

Joint Users Resource Allocation Planning (JURAP) Committee Meeting

Dave Doody

September 18, 2003

NASA / Jet Propulsion Laboratory



Cassini / Huygens

- **Space Science Phase**

- Routine science observations continue
- Huygens Probe Checkout #12 executed yesterday
- GWE#3, 20 days of 24X7 DSN coverage near opposition, executes 2003 DOY 314 through DOY 334
 - Continuous coherent X-band link
 - Ka-band link over GDSCC, coherent with Ka-up if spacecraft's Ka Translator recovers, else coherent to X-up
- Approach Science mission phase begins in January
- Tour advanced science planning continues

- **Daily ops going well**

- SOI Critical CMD Sequence demonstrated
- TCM-19A executed nominally, demonstrated ground-based Maneuver Automation System
- TCM-19B next month will demonstrate SOI burn cutoff algorithm based on energy determination on-board.
- DSN and NOPE support:
 - Corrections to the Network Operations Plan are STILL in progress.
 - TSSs are online.
- Exercised the Emergency Control Center in July
- Working various minor S/C instrument adjustments, cals, and anomalies near real time.
- Uplinking and installing the occasional flight software updates for instruments
- Refining Huygens Mission Data Delivery plans for the '05 Titan mission
 - Sharing data line with INTEGRAL mission for ESA to receive Huygens data
 - Successfully tested 30-min interval CDR replay yesterday for PCO#12.
- DSMS CMD System: wrong default U/L bit rate anomaly discovered and promptly troubleshot & corrected
- DSMS is denying Cassini's request to replace NOCC-R/T display system with one NMC instance.
 - Project's visibility into DSN is problematic, risking degraded realtime support for GWE#3 Approach Science, and Saturn Tour.

Wind and Polar New Requirements

Presented by Steve Odendahl, NASA Goddard Space Flight Center
September 18, 2003 JURAP



Material prepared at NASA/GSFC

by

Heather Franz, Wind Flight Dynamics Analyst

Dr. Neil Ottenstein, Polar Flight Dynamics Analyst

Joyce Milasuk-Ross, Wind/Polar Mission Scheduler/Planner

Steve Hearn, Wind/Polar Spacecraft Engineer

John Wainwright, Wind/Polar Instrument Engineer

Scope of Presentation

- Science objectives
- Wind
 - Current mission status
 - Current DSN requirements
- Polar
 - Current mission status
 - Current DSN requirements
- New operations requirements for automated “lights-out” scenario for the non-prime shift
- Relationship of Wind/Polar to other GSFC missions

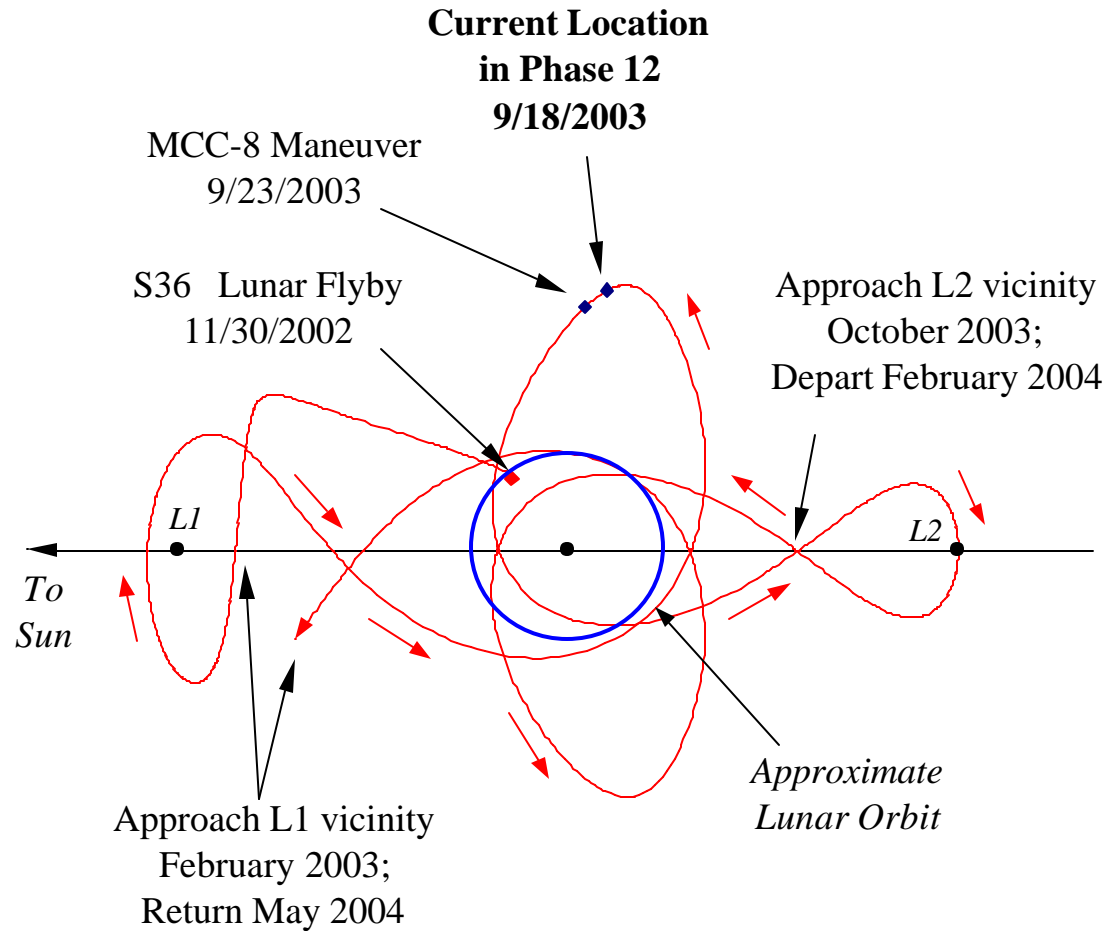
Wind/Polar Science Objectives

- Measure the mass, momentum, and energy flow throughout geospace
- Improve our understanding of plasma processes in geospace and trace their cause and effect behavior
- Assess the importance of variations in energy input to the atmosphere by geospace plasma processes
- Extend the systems-science approach to Sun-Earth connections, describing the dynamics processes associated with the decline of the solar cycle
- Investigate the global consequences of magnetic reconnection

Wind Extended Mission Phases

<i>Phase 1</i>	Oct 97 - Nov 98	"Halo orbit loop" => DLS 2-month outer loop
<i>Phase 2</i>	Nov 98 - Apr 99	Petal orbit at 55-deg ecliptic inclination => Lunar Backflip
<i>Phase 3</i>	Apr 99 - Oct 99	DLS 3-month outer loop and phasing orbits
<i>Phase 4</i>	Oct 99 - Feb 00	Petal orbit at 26-deg ecliptic inclination => Lunar Backflip
<i>Phase 5</i>	Feb 00 - May 00	DLS 2-month outer loop and phasing orbits
<i>Phase 6</i>	May 00 - Aug 00	Petal orbit at 5-deg ecliptic inclination
<i>Phase 7</i>	Aug 00 - Sep 01	Distant Prograde Orbit of 95 x 255 Earth radii
<i>Phase 8</i>	Sep 01 - Dec 01	Petal orbit at 5-deg ecliptic inclination
<i>Phase 9</i>	Dec 01 - Jul 02	Distant Prograde Orbit of 80 x 325 Earth radii
<i>Phase 10</i>	Jul 02 - Nov 02	Petal orbit at 5-deg ecliptic inclination
<i>Phase 11</i>	Nov 02 - Aug 03	L1 Excursion
Phase 12	Aug 03 - Mar 04	L2 Excursion
<i>Phase 13</i>	Mar 04 - ?	L1 Lissajous Orbit

Wind Extended Mission Phases 10 - 13



Ecliptic Plane Projection in L1 RLP Coordinates

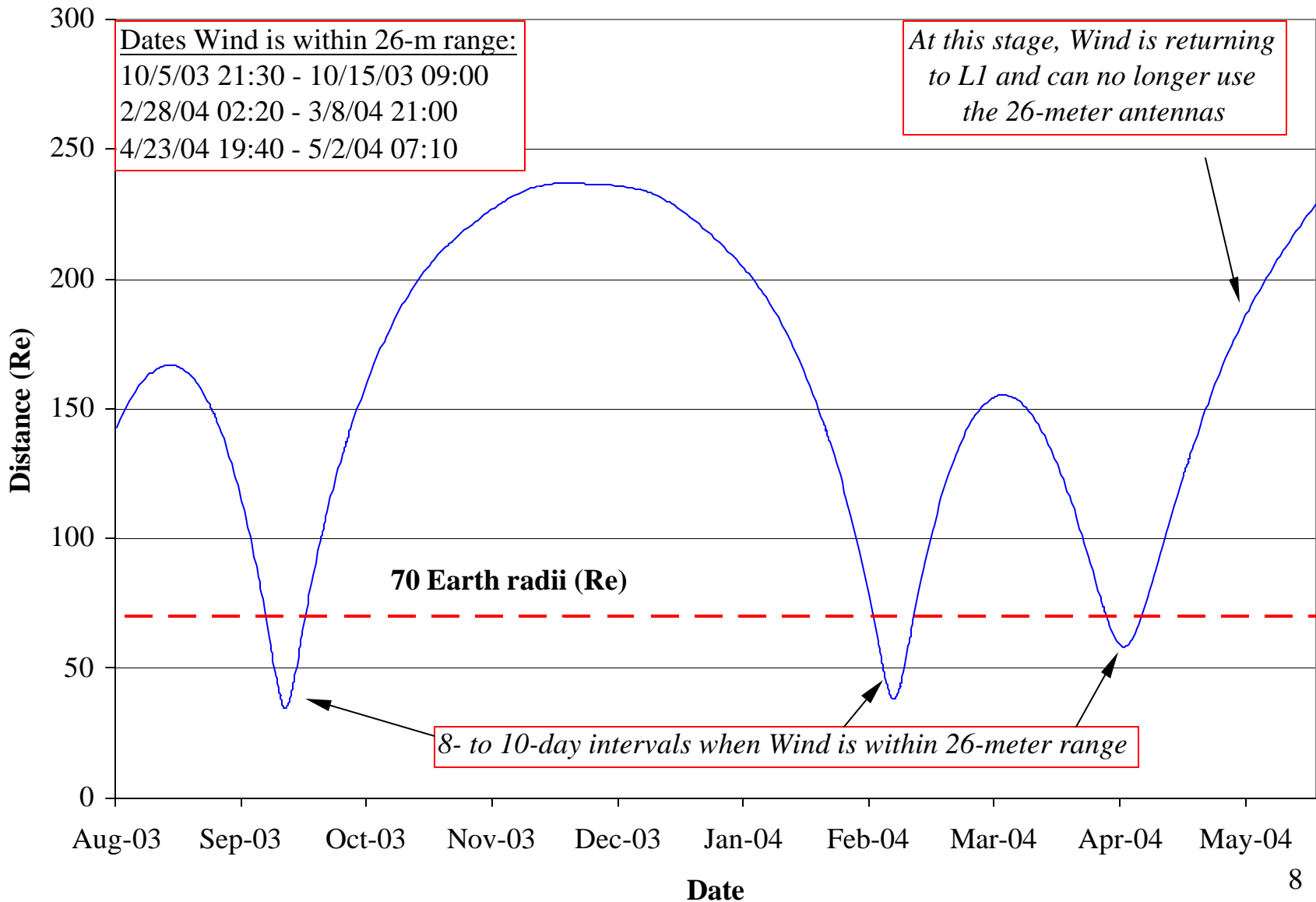
DSN Support for Wind

- The 26-meter antennas can only be used within distances of 70 Earth radii, provided that the aspect angles are within tolerable limits
- At least 2 hours of ranging are required daily to maintain a predictive orbital accuracy of 200 km during nominal mission conditions
- For accurate orbit determination, balanced ranging is required from each DSN site during each orbit determination arc (“walk through the network”)

Wind Libration Point Orbit Phases: Impact to DSN

- Wind will require the use of DSN 34-meter antennas, with very limited opportunities to use the 26-meter antennas, through the remainder of the currently planned mission (see next slide)
- As a contingency at distances beyond 70 Earth radii, Wind may use concurrent 26-meter (commanding) and 34-meter HEF (telemetry only) supports in place of the 34-meter BWG1 antennas

Wind Distance During Phases 12 - 13



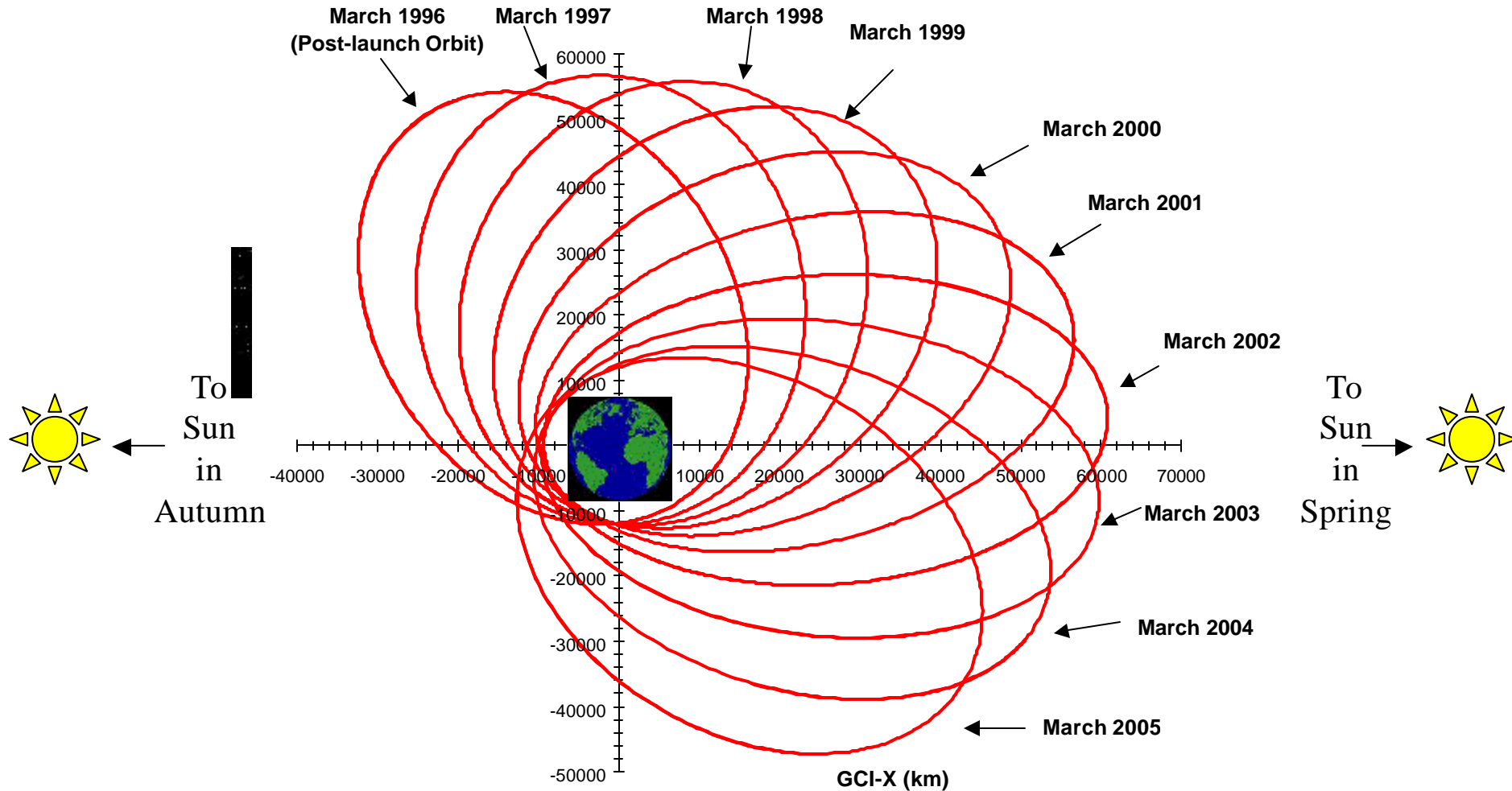
DSN Sites Supporting Wind

(Ranked in order of requirement and preferred usage)

<i>Nominal Supporting Stations</i>			
	> 70 Re	< 70 Re	Service:
DSN Site:	BWG1:	26-meter:	
Goldstone	DSS-24	DSS-16	Ranging, Uplink, Downlink
Madrid	DSS-34	DSS-46	“ “ “
Canberra	DSS-54	DSS-66	“ “ “
		BWG1:	
Goldstone	-	DSS-24	“ “ “
Madrid	-	DSS-34	“ “ “
Canberra	-	DSS-54	“ “ “
<i>Alternate Supporting Stations</i>			
DSN Site:		<100 Re	Service:
		HSB:	
Goldstone	-	DSS-27	No-Ranging, Uplink, Downlink
	HEF:	HEF:	
Goldstone	DSS-15	DSS-15	No-Ranging, Downlink Only
Madrid	DSS-45	DSS-45	“ “
Canberra	DSS-65	DSS-65	“ “

Precession of POLAR's Orbit Plane

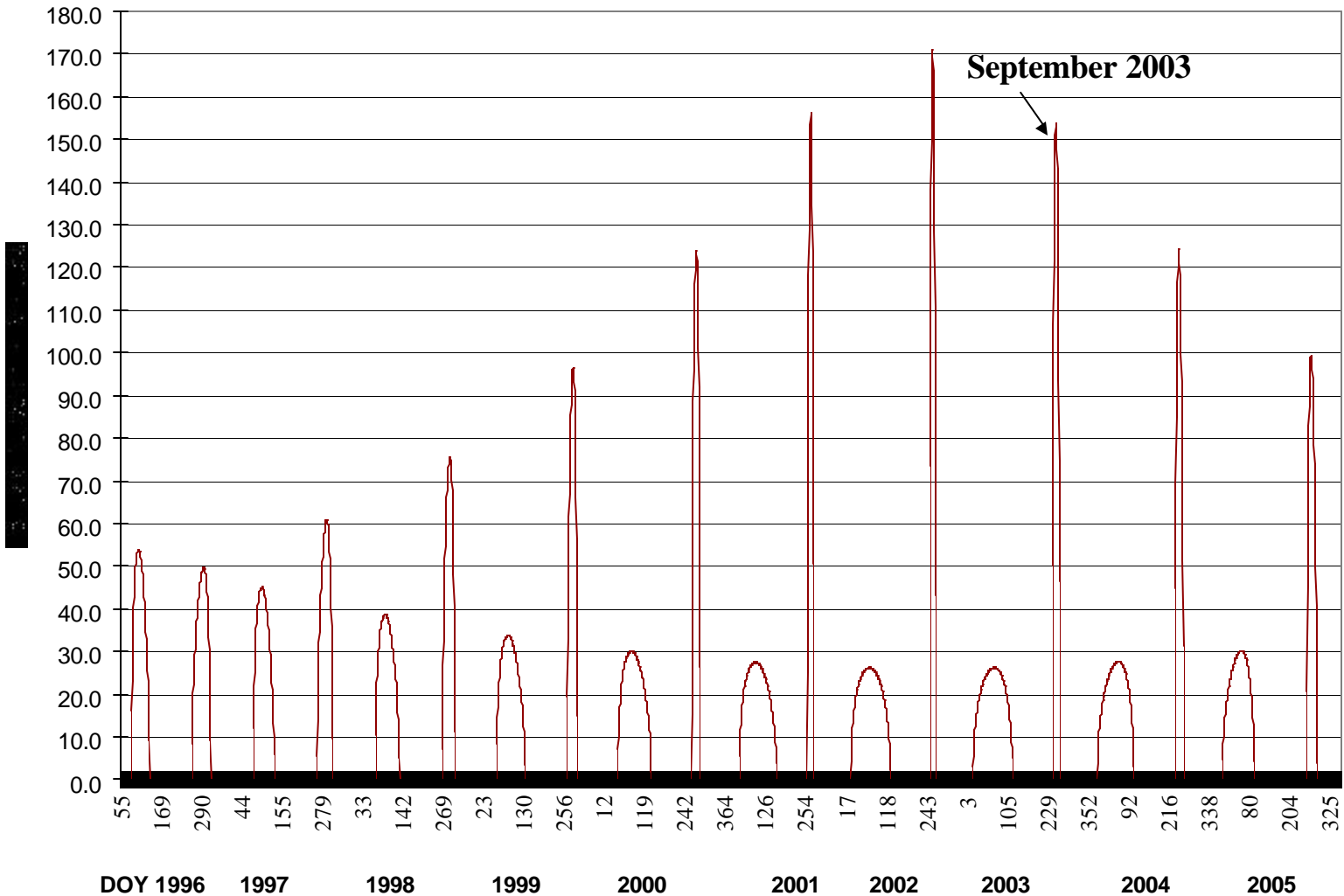
(Earth-centered Mean-of-J2000 Earth Equator Coordinates)



Orbit apsidal precession rate is approximately 16° per year

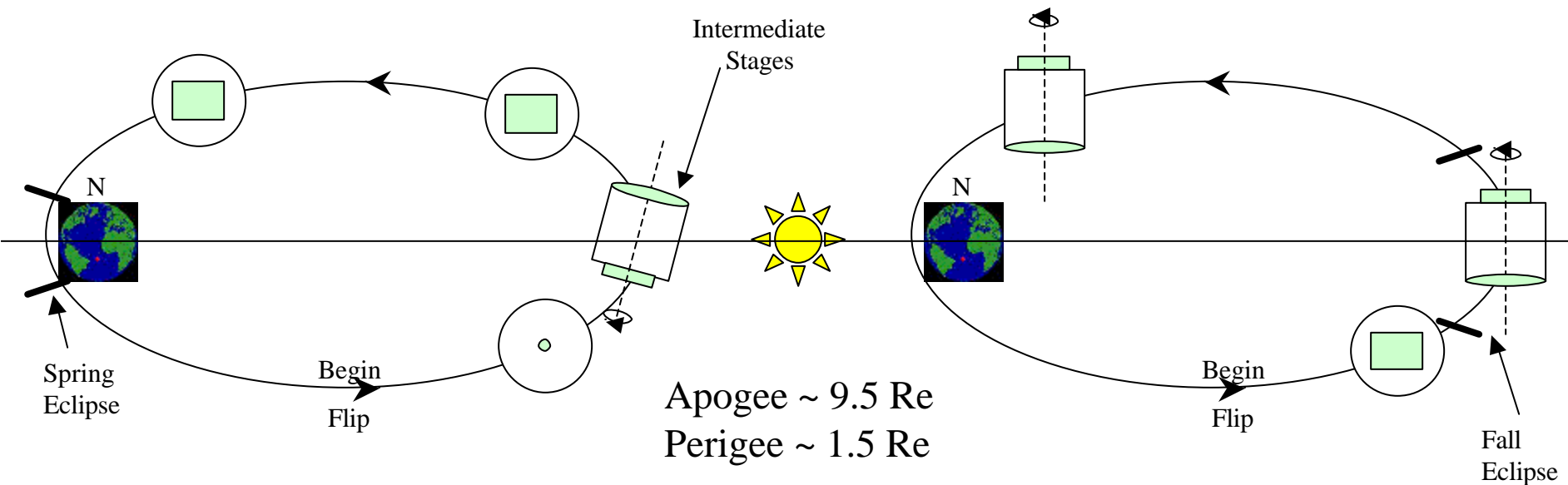
POLAR Eclipse Season

--- POLAR Eclipse Duration Since Launch ---



POLAR Semi-Annual Maneuvers – 2003

(Earth-centered Mean-of-J2000 Earth Equator Coordinates)



Flip 15 (Full flip): Spring 2003

From: - Orbit Normal

(Through Two Intermediate Stages)

To: + Orbit Normal

Flip 16 (1/2 flip): Autumn 2003

From: + Orbit Normal

To: North Ecliptic Normal

Polar Ecliptic Normal Attitude Phase: Impact to DSN

- Polar has recently transitioned to an ecliptic-normal attitude
 - Final semi-annual attitude reorientation (“flip”) maneuver was executed on September 1, 2003
 - Insufficient fuel remains for future flip maneuvers
 - Small attitude adjustments will be made periodically
- During ecliptic-normal orientation, aspect angle problems (angles less than 30° and greater than 150°) are more likely to occur when the spacecraft passes over the Earth’s poles

DSN Sites Supporting Polar

(Ranked in order of requirement and preferred usage)

<i>Nominal Supporting Stations</i>		
DSN Site:	26-meter:	Service:
Goldstone	DSS-16	Ranging, Uplink, Downlink
Madrid	DSS-46	“ “ “
Canberra	DSS-66	“ “ “
<i>Alternate Supporting Stations</i>		
DSN Site:	BWG1:	Service:
Goldstone	DSS-24	Ranging, Uplink, Downlink
Madrid	DSS-34	“ “ “
Canberra	DSS-54	“ “ “
	HSB:	
Goldstone	DSS-27	No-Ranging, Uplink, Downlink
	HEF:	
Goldstone	DSS-15	No-Ranging, Downlink Only
Madrid	DSS-45	“ “
Canberra	DSS-65	“ “

New Wind/Polar DSN Requirements

- A new operational plan for Wind/Polar includes an automated, “lights-out” scenario for the non-prime shift
- Small changes to DSN support requirements

New Wind DSN Requirements

Summary:

Must have at least one day shift* pass every 72 hours for uplink of stored command load

<i>DSN Pass Activity</i>	<i>Action</i>
TR DUMP	No requirement change
TKG PASS/UL	Must include a 20-minute, no-ranging, day shift support within 72-hour stored command load window in the event that the 72-hour period contains only night shift supports. This support is required for uplink of stored command table.

* Day shift is defined as 7 AM until 7 PM ET.

New Polar DSN Requirements

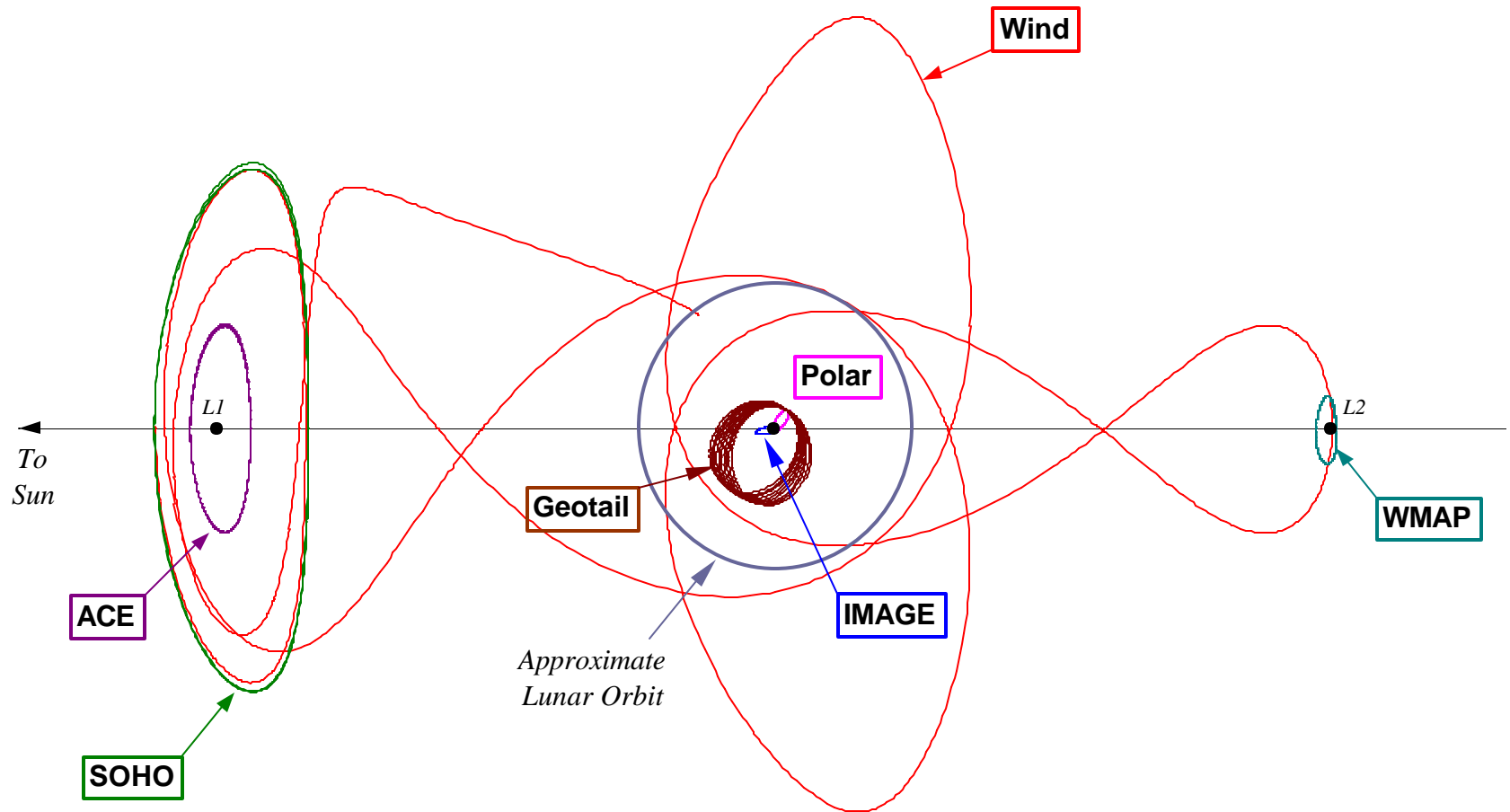
Summary:

Shortened support duration for unattended operations and reduction of instrument operations time

<i>DSN Pass Activity</i>	<i>Action</i>
PB ONLY (single playback)	50 minutes. Unattended Ops Only (1 hour for day shift*)
PB/PB (double playbacks)	2 hours. Unattended Ops Only (2 hours, 20 minutes for day shift)
/INST OPS/	The 3-hour science observation and instrument commanding support which occurred during the day shift, Monday through Friday, may be replaced by double playbacks in the same time slot.

* Day shift is defined as 7 AM until 7 PM ET.

GSFC Missions Routinely Supported by DSN



Ecliptic Plane Projection in L1 RLP Coordinates

Conclusions

- A new operations plan for Wind/Polar includes an automated, “lights-out” scenario for the non-prime shift
- In general, DSN support requirements will not change with the new operations plan, except under certain circumstances
- In Wind’s current libration point orbit phase, link margin constraints dictate the use of 34-m BWG stations, except for a few brief periods within 26-m range
- At Polar’s ecliptic normal attitude, aspect angle constraints may impact supports occurring over the Earth’s poles
- Polar’s orbital precession since launch now favors view periods at the Canberra site



Mars Exploration Rover

MER Report to the JURAP

Ben Toyoshima
September 18, 2003



MER Today: 9/18/03, DOY



Mars Exploration Rover

- MER-A
 - 22.9M miles from Earth, OWLT 2m 3sec
- MER-B
 - 20.8M miles from Earth, OWLT 1m 52sec
- Post-Launch Operations Readiness Test (PORT) 5/6



Mars Global Surveyor
**Flight Operations
Status**

E.E. Brower
September 18, 2003



Mars Global Surveyor

AGENDA



- Project Snapshot
- Recent Events/Accomplishments
- Mission Assessment
- Comments

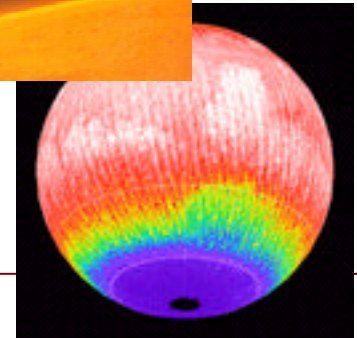
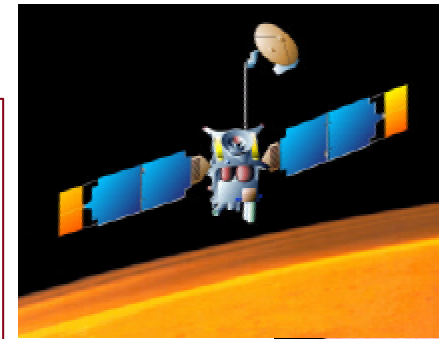
MGS



Mars Global Surveyor

Salient Features

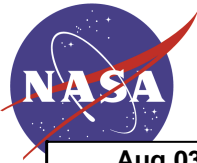
- **Global mapping of Martian atmosphere, surface, magnetic field**
- **Nadir pointed spacecraft**
- **5 instruments (MOC imager, MOLA laser altimeter, TES - IR spectrometer, MAG magnetometer, RS radio science)**
- **Launch date: November 1996**
- **Mapping lifetime: One Mars year (687 days)**
- **Provides relay capability for surface assets (Relay lifetime: 5 years)**



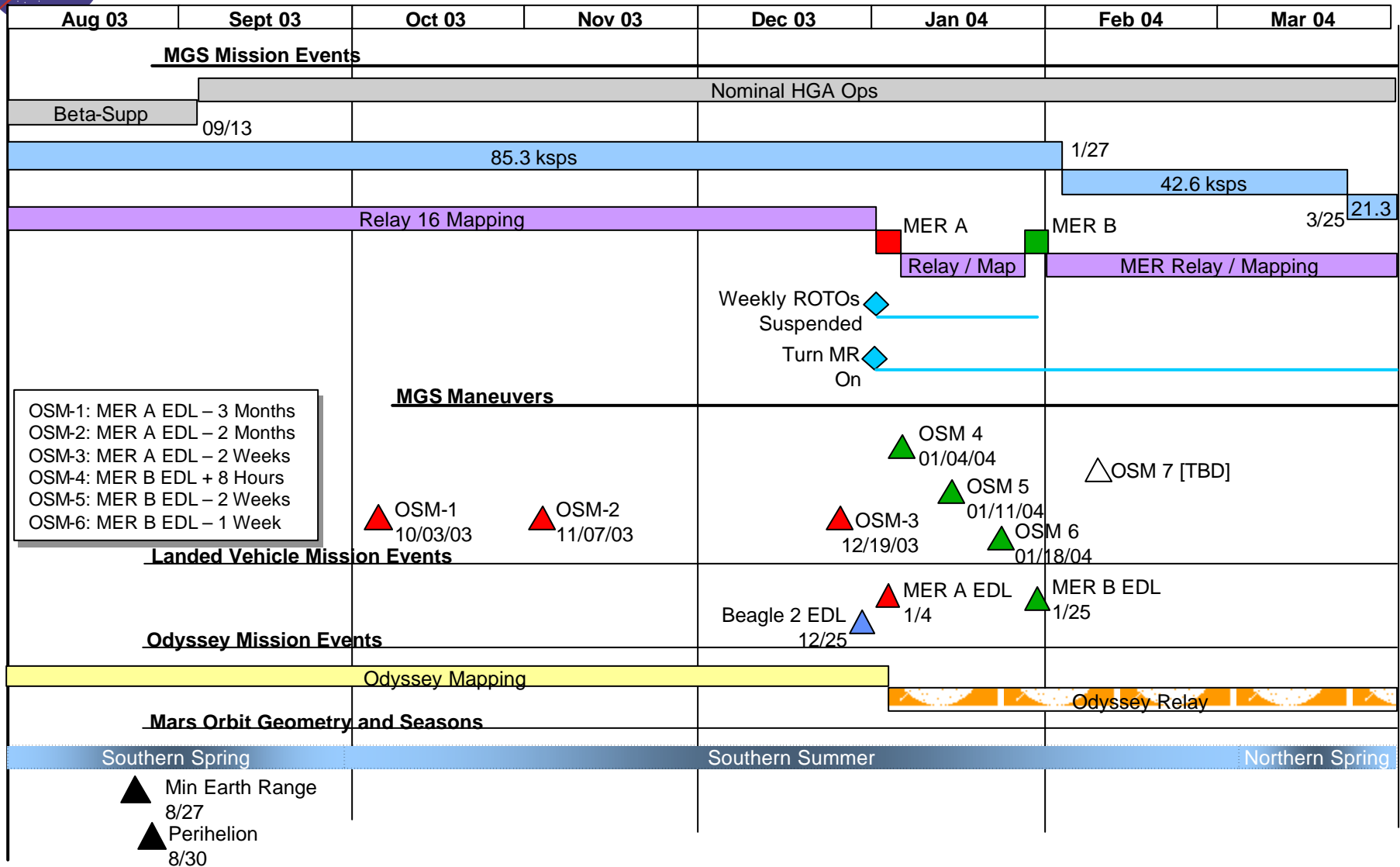
Science

- **To characterize surface morphology at high spatial resolution to quantify surface characteristics and geological processes**
- **To determine the composition and map the distribution of surface minerals, rocks, and ices; measure the surface thermophysical properties;**
- **To determine globally the topography, geodetic figure, and gravitational field;**
- **To establish the nature of the magnetic field and map the crustal remnant field;**
- **To monitor global weather and thermal structure of the atmosphere;**
- **To study surface-atmosphere interaction by monitoring surface features, polar caps, atmospheric dust, and condensate clouds over a seasonal cycle.**

MGS



Mars Global Surveyor Upcoming Events



MGS

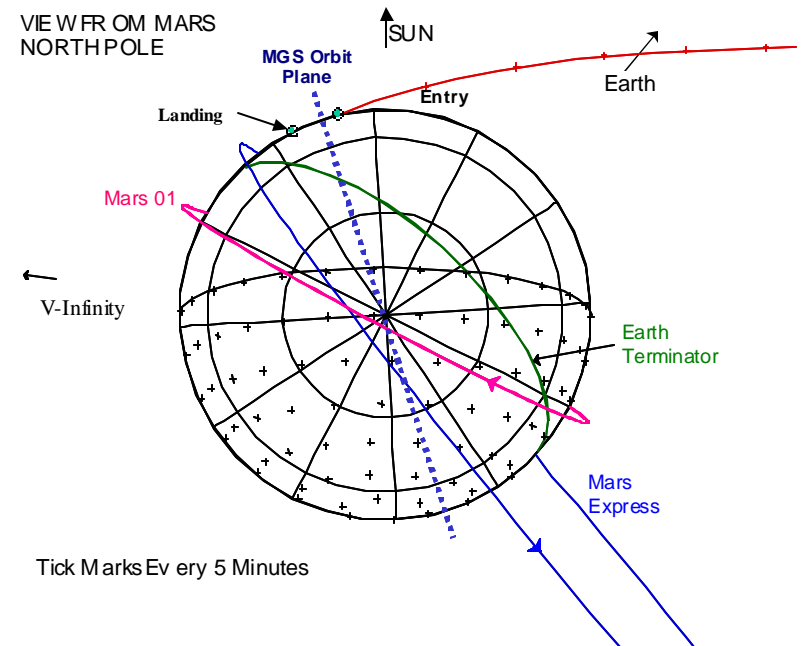


Mars Global Surveyor

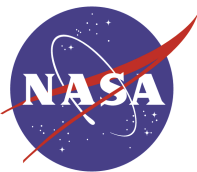
Phasing MGS for MER EDL



- 6 Maneuvers are planned (3 per MER), enabling MGS to have the most accurate over-flight times for each EDL
- **OSM-1 occurs 3 months before A-EDL**
 - After the MGS transition to Nominal HGA Mapping (Sept. 10)
 - Due to orbit perturbations, navigation predictions > 3 months out degrade
- **OSM 2 and 3 are placed between OSM-1 and A-EDL**
- **OSM-4, 5, & 6 are placed in the 21 day interval between A-EDL and B-EDL**
- **OSM-4 is planned for MER-A EDL + ~10 hours to stay within the 4 m/s Delta V allocation**



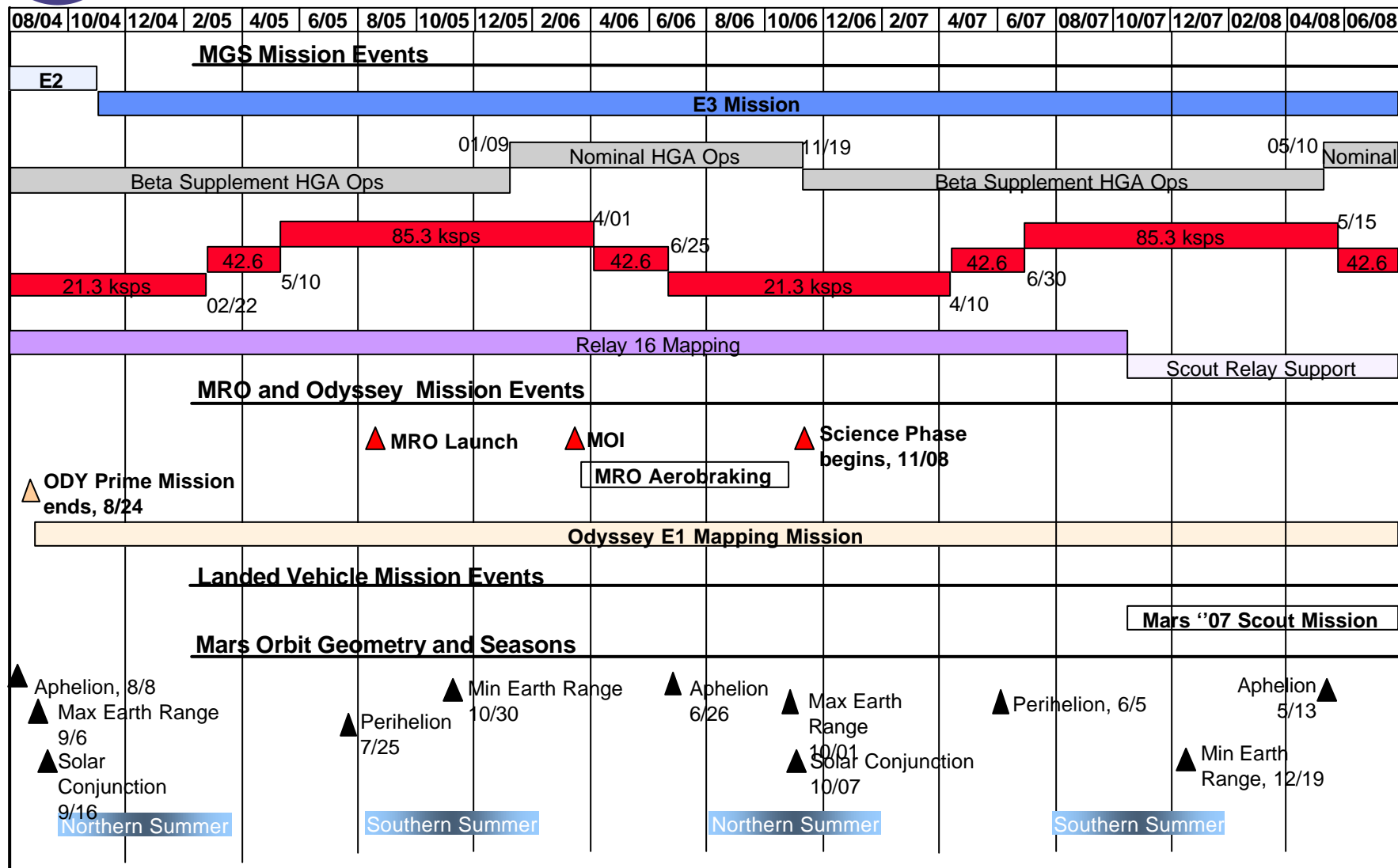
MGS



Mars Global Surveyor Proposed E3 Mission Timeline



Calendar Date



MGS



- P Completed OSM 1 rehearsal/ORT; conducted NAG review**
- P Completed Stanford tests with UHF antenna/end-to-end (MSSS/JPL) data processing**
 - Nominal performance with Stanford detection of MR beacon and received MER Rover files compared to uplink
- P Completed Transition to Nominal HGA Operations**
- P RS Egress occultations completed August 17 (8 egresses)**
- P Nearing completion of SGAD capability**

Codes:

P	Per Plan
F	Per Plan, but not previously forecasted
N	Not previously planned
L1,2,3	Late -- 1st, 2nd, 3rd time slipped
C	Canceled -- not needed



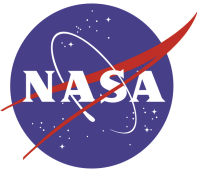
Mars Global Surveyor

Future Plans

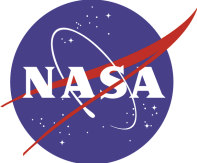


- **Spacecraft Transition to Mapping configuration**
- **OSM1/Plume Imaging Review September 17**
 - **OSM1 Scheduled to execute October 3.**
- **Continue MER interface planning per MGS UHF Working group**
 - **SORT preparation**
 - **Contingency OSM strategies**
 - **OSM execution on 10/3**
 - **Special observations planning e.g. image lander sites**
- **Develop PROTO operations for 3x MOC high resolution capability/MER site coverage**
- **Finish Single Gyro Attitude Determination Development for MER EDL**

MGS



- **Spacecraft is in good health.**
- **Expect to fulfill most extended mission objectives (complete MER site coverage may become E2 mission objective).**
- **Expect to satisfy MER EDL Requirements.**
- **Chances of operation through 2008 are good.**



- **None**